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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/597,327	06/12/2008	Uttam Ghoshal	089-0008-1	9317

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EXAMINER
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PAPE, ZACHARY

ART UNIT	PAPER NUMBER
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2835

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12/09/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/597,327	<b>Applicant(s)</b> GHOSHAL ET AL.	
	<b>Examiner</b> ZACHARY M. PAPE	<b>Art Unit</b> 2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 June 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 June 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/7/2007</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The information disclosure statement filed 11/7/2007 has been fully considered and is attached hereto.

### ***Specification***

2. The abstract of the disclosure is objected to because the abstract is not in the proper format. Correction is required. See MPEP § 608.01(b).

### ***Claim Objections***

3. Claim 19 is objected to because of the following informalities:  
  
Claim 19 recites, "bend of the bend" which is incorrect.  
  
Appropriate correction is required.

### ***Double Patenting***

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated

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by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 1-6, 9-18, 20-24, and 26 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 14 of U.S. Patent No. 6,658,861 (Hereinafter, "Ghoshal") in view of Pokharna et al. (US 7,269,005 – hereinafter, "Pokharna").

6. With respect to claims 1-6 and 8, claim 1 of Ghoshal teaches all the limitations of claim 1 of the present application but fails to specifically teach or suggest the details to the bend, hinge, or heat pipe. Pokharna, as per below, teaches all such limitations. It would have been obvious to one of ordinary skill in the art at the time the invention was

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made to combine the teachings of Pokharna with that of Ghoshal, such that the system of Ghoshal is implemented in a laptop computer, since doing so would, predictably, provide utility to the cooling system disclosed by Ghoshal.

7. With respect to claims 9-15, claim 1 of Ghoshal teaches all the limitations of claim 9 of the present invention but fails to specifically teach or suggest the details to the bend, hinge, or heat pipe. Pokharna, as per below, teaches all such limitations. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Pokharna with that of Ghoshal, such that the system of Ghoshal is implemented in a laptop computer, since doing so would, predictably, provide utility to the cooling system disclosed by Ghoshal.

8. With respect to claims 17-18, 20-21, claim 14 of Ghoshal teaches all the limitations of claim 16 as per paragraph 10 below but fails to specifically teach or suggest the limitations of claims 17-18, 20-21. Pokharna, as per the art rejections below, teaches all such limitations to the bend, flexible conduit, heat pipe, etc. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Pokharna with that of Ghoshal, such that the system of Ghoshal is implemented in a laptop computer, since doing so would, predictably, provide utility to the cooling system disclosed by Ghoshal.

9. With respect to claims 22-24, 26, Ghoshal teaches all the limitations of claims 22-26 but fails to specifically teach or suggest the details to the hinge, flexible tubing, heat pipe, etc. Pokharna, as per the art rejection below, teaches all such limitations to the bend, flexible conduit, heat pipe, etc. It would have been obvious to one of ordinary skill

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in the art at the time the invention was made to combine the teachings of Pokharna with that of Ghoshal, such that the system of Ghoshal is implemented in a laptop computer, since doing so would, predictably, provide utility to the cooling system disclosed by Ghoshal.

10. Claim 16 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 14 of U.S. Patent No. US 6,658,861.

Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 14 of Ghoshal teaches all the limitations of present claim 16.

### ***Claim Rejections - 35 USC § 102***

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 16-18, 20-24, 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Pokharna et al. (US 7,269,005 – hereinafter, “Pokharna”).

With respect to method claims 16-18, 20-24, and 26, the method steps recited in the claims are inherently necessitated by the device structure as taught by the Pokharna reference below.

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***Claim Rejections - 35 USC § 103***

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6, 8-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pokharna in view of Barkan et al. (US 3,812,404 – hereinafter, “Barkan”).

With respect to claims 1 and 5, Pokharna teaches (In Fig 6) a system for dissipating heat from a high power density device, the system comprising: a pathway (Tubing) for transport of a liquid metal thermal transfer fluid (Col 4, Lines 11-12), the pathway including a portion (210) in close thermal communication with the high power density device; and at least one pump (220) for motivating flow of the liquid metal thermal transfer fluid through the liquid metal thermal transfer pathway away from and back to the high power density device, wherein the high power density device is located in a folding device (Notebook computer shown in Fig 6), and wherein at least a portion of the liquid metal thermal transfer pathway traverses a bend (Portion where 640 and 610 meet) in the folding device (See Fig 6). Pokharna fails to specifically teach or suggest that the pump is an electromagnetic pump as claimed. Barkan teaches using an electromagnetic pump (50) to pump a liquid metal through a device (Col 3, Lines 28-33). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Barkan with that of Pokharna, such

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that the pump of Pokharna is a EM pump as taught by Barkan since doing so would provide adequate flow rates in the system of Pokharna (Col 1, Lines 51-53).

With respect to claims 2, 11, and 14, Pokharna further teaches that the bend traversing portion of the liquid metal thermal transfer pathway includes a flexible conduit (See Fig 6, 614).

With respect to claims 3 and 12, Pokharna further teaches that the bend traversing portion of the liquid metal thermal transfer pathway includes a hinge (614) that defines an integrated conduit therethrough.

With respect to claims 4, 9, 10, 13, 15 Pokharna further teaches a heat pipe (650, Col 5, Lines 57-59); and a heat exchanger (660) coupled to transfer heat between the liquid metal thermal transfer fluid and the heat pipe (Col 5, Lines 51-62)

With respect to claim 6, Pokharna further teaches that the pathway portion (210) in close thermal communication with the high power density device includes a solid-fluid heat exchanger (read: a heat exchanger which has/allows liquid metal to flow therethrough - which is taught by Pokharna as per above).

With respect to claim 8, Pokharna further a heat sink (650) separated from the high power density device by a heat transfer path that includes the bend traversing portion of the liquid metal thermal transfer pathway (See Fig 6).

**13. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pokharna in view of Barkan and further in view of the Examiner's Official Notice (EON).**



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With respect to claim 7, Pokharna in view of Barkan teach the limitations of claim 1 as per above but fails to specifically teach or suggest the limitations of claim 7. The Examiner hereby takes Official Notice of the conventionality of having an evaporator/cold plate/heat exchanger which is placed atop a component and which allows direct contact between the component and the working fluid. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the EON with that of Pokharna and Barkan, such that the evaporator of Pokharna allows for direct thermal contact between the liquid metal and the component, since doing so would, predictably, allow for more thermal transfer of heat since there is no intermediary between the coolant and the top of the device.

**14. Claims 19 and 25 are rejected under 35 U.S.C 103(a) as being unpatentable over Pokharna in view of EON.**

With respect to claim 19, Pokharna teaches the limitations of claim 17 as per above but fails to specifically teach or suggest that the bend increases or decreases during the flow of liquid metal (read: the display is rotated relative to the base as the fluid flows). The Examiner hereby takes Official Notice of the conventionality of adjusting a display of a laptop computer as the computer is in operation. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of EON with that of Pokharna, such that the display of Pokharna is rotated during operation of the cooling system, since doing so would, predictably, allow for a user to find a suitable display angle for using the computer.

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With respect to method claim 25, the method steps recited in the claims are inherently necessitated by the device structure as taught by the Pokharna and EON references.

### ***Conclusion***

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ZACHARY M. PAPE whose telephone number is (571)272-2201. The examiner can normally be reached on Mon.- Fri. 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jayprakash Gandhi can be reached on 571-272-3740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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